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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/735,099	Applicant(s) DAPPRICH ET AL.	
	Examiner BJ Forman	Art Unit 1655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 December 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: Notice to Comply w Sequence Rules

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. Claims 1-17 are indefinite in Claim 1 for the recitation "thereby forming an immobilized targeting element-separation group complex" because it is unclear whether the nucleic acid of interest is a component of the "complex". It is suggested that Claim 1 be amended to clarify e.g. after "separation group", insert "nucleic acid".

b. Claims 6-12 are indefinite in Claim 6 for the recitation "said oligonucleotide" because the recitation lacks proper antecedent basis in Claim 1. It is suggested that Claim 6 be amended to provide proper antecedent basis e.g. replace "oligonucleotide" with "nucleic acid sequence of interest".

c. Claims 10-12 are indefinite in Claim 10 for the recitation "said targeting element is an oligonucleotide" because the recitation does not further limit Claim 5 from which Claim 10 depends. It is suggested that Claim 10 be amended to further limit Claims 4-6 and 9.

d. Claim 18 is indefinite for the recitation "thereby forming a second immobilized targeting element-separation group complex" because it is unclear whether the nucleic acid of interest is a component of the "complex". It is suggested that the claim be amended to clarify e.g. after "separation group", insert "nucleic acid".

e. Claim 18 is further indefinite because it is unclear at what point in the method of Claim 1 the further method steps are performed. It is suggested that the claim be amended to

clarify e.g. "wherein said first and second targeting elements contact said population of nucleic acid molecules simultaneously" (page 16, lines 20-23).

f. Claim 19 is indefinite in step (c) as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: the method steps for removing said separation group in step (c) while maintaining the targeting element-separation group complex of step (d). It is suggested that the claim be amended to recite the omitted elements e.g. in step (c), after "separation group" insert "not attached to target elements"

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-6, 13, 17, 19 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Rigas et al. (Proc. Natl. Acad. Sci. USA, 1986, 83: 9591-9595).

Regarding Claim 1, Rigas et al. disclose a method for separating a nucleic acid of interest (i.e. recombinant plasmid) from a population of nucleic acid molecules comprising: providing a population of nucleic acid molecules; contacting said population with a first targeting element (i.e. biotinylated probe) wherein said targeting element binds specifically to at least one nucleic acid molecule of interest; attaching a separation group (i.e. avidin) to the targeting element; immobilizing said attached separation group to a substrate (i.e. cupric iminodiacetic acid column) thereby forming an immobilized targeting element-separation group

complex; removing said complex from said population of nucleic acid molecules thereby separating said nucleic acid sequence of interest from said population of nucleic acid molecules (page 9591, right column second full paragraph, lines 13-23, and page 9592, Fig. 1).

Regarding Claim 2, Rigas et al. disclose the method wherein at least one nucleic acid sequence of interest includes a distinguishing element i.e. sequence complementary to the probe (page 9591, right column, first full paragraph). The claims are given the broadest reasonable interpretation consistent with the indefinite claim language and specification wherein distinguishing element is not clearly defined. Given the broadest reasonable interpretation the claimed "distinguishing element" encompasses the complementary sequence of Rigas et al. because it is their complementary sequence which distinguishes their plasmid of interest.

Regarding Claim 3, Rigas et al. disclose the method wherein the targeting element binds to said nucleic acid sequence within 20 nucleotides of said distinguishing element i.e. the biotinylated probe binds to the complementary sequence which is their distinguishing element (page 9592, left column).

Regarding Claim 4, Rigas et al. disclose the method wherein the targeting element comprises a nucleic acid sequence i.e. biotinylated probe (page 9592, left column).

Regarding Claim 5, Rigas et al. disclose the method wherein the targeting element is an oligonucleotide i.e. biotinylated probe (page 9592, left column).

Regarding Claim 6, Rigas et al. disclose the method wherein said oligonucleotide has an extendable 3' hydroxy terminus i.e. the probes biotinylated using the T4 polymerase reaction produces extendable oligonucleotides (page 9592, right column, first full paragraph).

Regarding Claim 13, Rigas et al. disclose the method wherein said population of nucleic acids is a population of DNA molecules i.e. plasmids (page 9593, left column, last paragraph-right column first paragraph and page 9592, Fig. 2).

Regarding Claim 17, Rigas et al. disclose the method wherein the substrate is a bead (page 9591, right column, second full paragraph, lines 17-18).

Regarding Claim 19, Rigas et al. disclose a method for separating a nucleic acid of interest (i.e. recombinant plasmid) from a population of nucleic acid molecules comprising: providing a population of nucleic acid molecules; contacting said population with a targeting element attached to a separation group (i.e. biotinylated probe) wherein said targeting element binds specifically to at least one nucleic acid molecule of interest; removing said separation group not bound to targeting element (i.e. via wash page 9592, right column, third full paragraph); immobilizing said attached separation group to a substrate (i.e. streptavidin/agarose bead or iminodiacedic acid/agarose bead)thereby forming an immobilized targeting element-separation group complex; and removing said immobilized complex from said population of nucleic acid molecules thereby separating said nucleic acid sequence of interest from said population of nucleic acid molecules (page 9591, right column second full paragraph, lines 13-23, and page 9592, Fig. 1).

Regarding Claim 20, Rigas et al. disclose the method wherein at least one nucleic acid sequence of interest includes a distinguishing element i.e. sequence complementary to the probe (page 9591, right column, first full paragraph). The claims are given the broadest reasonable interpretation consistent with the indefinite claim language and specification wherein distinguishing element is not clearly defined. Given the broadest reasonable interpretation the claimed "distinguishing element" encompasses the complementary sequence of Rigas et al. because it is their complementary sequence which distinguishes their plasmid of interest.

5. Claims 1-8, 13, 15 and 17-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Tyagi et al. (U.S. Patent No. 5,759,773, issued 2 June 1998).

Regarding Claim 1, Tyagi et al. disclose a method for separating a nucleic acid of interest from a population of nucleic acids molecules comprising: providing a population of nucleic acid molecules of interest; contacting said population of nucleic acid molecules with a first targeting element (i.e. reporter probes) wherein the targeting element binds specifically to at least one nucleic acid of interest; attaching a separation group (i.e. capture probe/paramagnetic particle) to said targeting element; immobilizing said separation group to a substrate (i.e. wall of a test tube, Column 11, lines 63-67) thereby forming an immobilized targeting element-separation group complex; and removing said immobilized complex from said population of nucleic acid molecules to thereby separate the nucleic acid of interest (Example 1, Column 14, lines 30-55 and Column 11, lines 35-42). The claims are given the broadest reasonable interpretation consistent with the indefinite claim language and specification wherein the order of method steps is not clearly defined and wherein the open claim language "comprising" encompasses additional method steps. Therefore, given the broadest reasonable interpretation, Tyagi et al. disclose the method as claimed.

Regarding Claim 2, Tyagi et al. disclose the method wherein the nucleic acid of interest includes a distinguishing element i.e. the integrase region of HIV (Column 14, lines 34-38).

Regarding Claim 3, Tyagi et al. disclose the method wherein said targeting element binds to said sequence of interest at a sequence with 20 nucleotides of said distinguishing element i.e. the reporter probe binds to the integrase region and therefore is within the claimed 20 nucleotides (Column 14, lines 42-49).

Regarding Claim 4, Tyagi et al. disclose the method wherein said targeting element (reporter probe) comprises a nucleic acid sequence (Column 14, lines 42-29).

Regarding Claim 5, Tyagi et al. disclose the method wherein said targeting element (reporter probe) is an oligonucleotide (Column 4, lines 39-41).

Regarding Claim 6, Tyagi et al. disclose the method wherein the oligonucleotide has an extendable 3' hydroxy terminus i.e. the reporter probe provides for ligation and amplification and therefore comprises an extendable 3' hydroxy (Column 12, lines 38-42).

Regarding Claim 7, Tyagi et al. disclose the method wherein the separation group is an immobilizable nucleotide i.e. capture probe/paramagnetic particle (Column 14, lines 46-50 and Fig. 1).

Regarding Claim 8, Tyagi et al. disclose the method wherein the immobilizable nucleotide is a biotinylated nucleotide (Column 14, lines 46-47).

Regarding Claim 13, Tyagi et al. disclose the method wherein the population of nucleic acids is a population of DNA molecules (Column 4, lines 39-40).

Regarding Claim 15, Tyagi et al. disclose the method wherein the population of nucleic acid molecules is a population of RNA molecules (Column 4, lines 39-40).

Regarding Claim 17, Tyagi et al. disclose the method wherein the substrate is a glass surface i.e. test tube (Column 11, lines 63-67).

Regarding Claim 18, Tyagi et al. disclose the method further comprising a second targeting element i.e. the first targeting element is reporter probe #8 and the second targeting element is reporter probe #9 (Column 14, lines 47-49 and Fig. 1); attaching a second separation group i.e. the first separation group comprises capture probe #3 and the second separation group comprises capture probe #4 (Column 14, lines 46-47 and Fig. 1); immobilizing said attached second separation group to a substrate thereby forming a complex and removing said immobilized complex from said population of nucleic acid molecules (Column 14, lines 30-55).

Regarding Claim 19, Tyagi et al. disclose a method for separating a nucleic acid of interest from a population of nucleic acids molecules comprising: providing a population of nucleic acid molecules of interest; contacting said population of nucleic acid molecules with a first targeting element attached to a separation group wherein said targeting element binds

specifically to at least one nucleic acid of interest (i.e. biotinylated capture probe); removing said separation group (i.e. the unbound hybrids are removed via wash) immobilizing said attached separation group to a substrate (i.e. paramagnetic particle) thereby forming an immobilized targeting element-separation group complex; and removing said immobilized complex from said population of nucleic acid molecules to thereby separate the nucleic acid of interest (Example 1, Column 14, lines 30-55). The claim is given the broadest reasonable interpretation consistent with the indefinite claim language and specification wherein the order of method steps is not clearly defined and wherein the open claim language "comprising" encompasses additional method steps as taught by Tyagi et al. Therefore, given the broadest reasonable interpretation, Tyagi et al. disclose the method as claimed.

Regarding Claim 20, Tyagi et al. disclose the method wherein the nucleic acid of interest includes a distinguishing element i.e. the integrase region of HIV (Column 14, lines 34-38)

6. Claims 9-12, 14 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Tyagi et al. (U.S. Patent No. 5,759,773, issued 2 June 1998) in view of Edman et al. (U.S. Patent No. 6,309,833 B1, filed 12 April 1999).

Regarding Claim 9, Tyagi et al. disclose a method for separating a nucleic acid of interest from a population of nucleic acids molecules comprising: providing a population of nucleic acid molecules of interest; contacting said population of nucleic acid molecules with a first targeting element (i.e. reporter probes) wherein the targeting element binds specifically to at least one nucleic acid of interest; attaching a separation group (i.e. capture probe/paramagnetic particle) to said targeting element; immobilizing said separation group to a substrate (i.e. wall of a test tube, Column 11, lines 63-67) thereby forming an immobilized targeting element-separation group complex; and removing said immobilized complex from said population of nucleic acid molecules to thereby separate the nucleic acid of interest (Example

1, Column 14, lines 30-55 and Column 11, lines 35-42) but they do not teach the separation group is attached to said targeting element by extension of said oligonucleotide with a polymerase in the presence of a biotinylated nucleotide. Edman et al. teach a similar method comprising: providing a population of nucleic acid molecules of interest; contacting said population with a first targeting element which binds specifically to said nucleotide of interest (i.e. signal primer); attaching a separation group (i.e. biotin); and immobilizing target group-separation complex (Column 23, lines 48-60) and wherein said separation group is attached to said targeting element by extension of said oligonucleotide with a polymerase in the presence of a biotinylated nucleotide (Column 18, lines 20-32). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the separation group-target element attachment by hybridization of Tyagi et al. with the target element extension-attachment taught by Edman et al. to thereby detect the presence of a single nucleotide (e.g. point mutation) known to be a disease-causing nucleotide for the obvious benefit of detecting clinically important nucleotides as taught by Edman et al. (Column 5, lines 55-64).

Regarding Claim 10, Tyagi et al. teach the method wherein said targeting element (reporter probe) is an oligonucleotide (Column 4, lines 39-41).

Regarding Claim 11, Tyagi et al. teach the method wherein the separation group is an immobilizable nucleotide i.e. capture probe/paramagnetic particle (Column 14, lines 46-50 and Fig. 1).

Regarding Claim 12, Tyagi et al. teach the method wherein the immobilizable nucleotide is a biotinylated nucleotide (Column 14, lines 46-47).

Regarding Claim 14, Tyagi et al. teach the method wherein said population of nucleic acids is a population of DNA molecules (Column 4, lines 39-41) but they do not specifically the teach DNA molecules are genomic DNA molecules or cDNA molecules. However, Edman et al. teach the similar method wherein the nucleic acid molecules are genomic DNA (Column 1, lines

43-48). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the genomic DNA population taught by Edman et al. to the method for detecting DNA taught by Tyagi et al. based on the teaching of Edman et al. wherein genomic DNA comprises disease-causing mutations (Column 5, lines 55-64) to thereby detect genomic DNA containing mutations for the obvious benefit of detecting clinically important nucleic acids.

Regarding Claim 16, Tyagi et al. teach the method wherein the detection element is a site-specific (Column 20, lines 44-50) but they do not specifically teach the element is a single nucleotide polymorphism (SNP). However, Edman et al. teach the similar method wherein the detection element is a SNP (Column 5, lines 55-64). It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to apply the SNP detection taught by Edman et al. to the method for detecting site-specific sequences taught by Tyagi et al. based on the teaching of Edman et al. wherein SNP are disease-causing mutations (Column 5, lines 55-64) to thereby detect SNP in a patient sample for the obvious benefit of detecting clinically important nucleic acids.

Prior Art

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Segawa et al. (U.S. Patent No. 6,261,773, filed 16 March 1999) teach a method for separating a nucleic acid molecule comprising contacting a population of nucleic acid molecules with a targeting element and separation group (Column 13, line 58-Column 14, line 25).

Double Patenting

8. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

9. Claims 1-18 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1-18 of copending Application No. 09/733,846. This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

10. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

11. Claims 19 and 20 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 19 of copending Application No. 09/733,846. Although the conflicting claims are not identical, they are not patentably distinct from each other because both instant claims 19 and 20 and the '846 claim are drawn to method for separating a nucleic acid and differ only in the instant claim 19 recites an extra step of removing the separation group and instant claim 20 recites the added

limitation wherein the nucleic acid includes a distinguishing element. However, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to remove (i.e. separate) the separation group because it was well known in the art that separation groups were practiced for removing/separating applications. Additionally, It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the nucleic acid sequence of interest to include a distinguishing element (e.g. label) based on the well know practice of labeling a sequence to thereby facilitate detection of the sequence for the obvious benefit of detecting the sequence of interest.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Nucleic Acid Sequence Rules

12. This application contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 CFR 1.821(a)(1) and (a)(2). However, this application fails to comply with the requirements of 37 CFR 1.821 through 1.825 for the reason(s) set forth on the attached Notice To Comply With Requirements For Patent Applications Containing Nucleotide Sequence And/Or Amino Acid Sequence Disclosures. Applicant must comply with the requirements of the sequence rules (37 CFR 1.821 - 1.825) before the application can be examined under 35 U.S.C. §§ 131 and 132.

Applicant is given A PERIOD OF TIME WHICH IS CO-EXTENSIVE WITH THE PERIOD OF TIME WITHIN WHICH TO RESPOND TO THE ABOVE OFFICE ACTION to comply with the sequence rules, 37 CFR 1.821 - 1.825. Failure to comply with these requirements will result in ABANDONMENT of the application under 37 CFR 1.821(g). Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37

CFR 1.136(a). Direct the reply to the undersigned. Applicant is requested to return a copy of the attached Notice to Comply with the reply.

Conclusion

13. No claim is allowed.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BJ Forman whose telephone number is (703) 306-5878. The examiner can normally be reached on 6:45 TO 4:15.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Jones can be reached on (703) 308-1152. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-4242 for regular communications and (703) 308-8724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

BJ Forman, Ph.D.
November 15, 2001

W. Gary Jones
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